SMARTZONE – DATA PLANE

Scalable Wireless LAN Data Plane Appliance

DATA SHEET

BENEFITS

FLEXIBLE TRAFFIC REDIRECTION

SmartZone Data Plane supports local break out of traffic as well as packet forwarding for up to three third-party wireless gateways with support for L2oGRE and QinQ tunnels.

DEPLOYMENT FLEXIBILITY

Deploy any combination of vSZ-D and/or SZ100-D per location to optimize and scale wireless traffic.

SECURE TUNNELED WLANS

Forward user data traffic from Ruckus APs on a per-WLAN basis through secure tunnels with support for NAT traversal.

HIGH-SPEED PACKET PROCESSING

Get data packet forwarding throughput speeds of 1Gbps, 10Gbps or higher.

CENTRALIZED CONTROL

Deploy SmartZone Data Plane within a centralized data center, or remotely at tenant locations while maintaining centralized control over the entire wireless network.

MANAGEMENT SIMPLICITY

The SmartZone Data Plane seamlessly integrates with the vSZ, which makes network management easier and more flexible.

SERVICES

DHCP/NAT

Built-in DHCP services enable high-speed wireless client IP assignment, while NAT services help reduce MAC-address scaling challenges on infrastructure switches.

LAYER 3 ROAMING

Distributed SmartZone Data Planes interconnect via Ruckus GRE tunnels enabling layer 3 roaming without the need for a separate mobility controller.

LAWFUL INTERCEPT

Support lawful intercept of encrypted traffic to maintain CALEA compliance on public or government-owned networks. Enable the mirroring of client traffic to a LIG (lawful intercept gateway) over L2oGRE (soft GRE).

VIRTUAL TRUSTED WIRELESS ACCESS GATEWAY

Integrate Wi-Fi into the mobile packet core to enable seamless handoff between Wi-Fi and cellular technologies. vTWAG is supported only on vSZ-D.

The SmartZone™ Data Plane is a wireless LAN data plane product that comes in both virtualized (vSZ-D) and physical (SZ100-D) form factors. Made to work seamlessly with the Ruckus Virtual SmartZone network controllers, the SmartZone Data Plane enables secure tunneled WLANs from Ruckus APs while minimizing the customer's operational expenses and maximizing Wi-Fi deployment flexibility and scale.

SmartZone Data Plane is built in virtual and physical form factors to suit the needs of organizations with varied virtualization needs in central and tenant locations. vSZ-D is ideal for organizations with muscular IT teams that have expertise in deploying a virtualized infrastructure across central and tenant locations. SZ100-D appliance benefits organizations that have leaner IT departments with limited virtualization expertise or that wish to further simplify deployments in tenant locations.

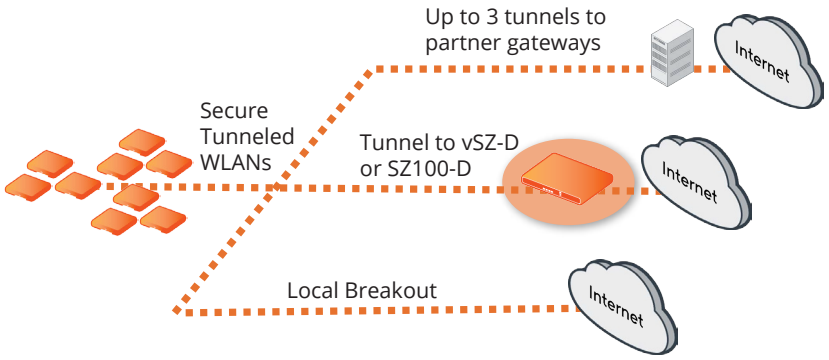
Operators, ISPs and large enterprises can deploy the vSZ-D or SZ100-D in a centralized data center with the vSZ, and/or at specific venues in a distributed topology. In addition, organizations have the flexibility to deploy SZ100-D or vSZ-D at each of the tenant locations based on their requirements.

MULTI-SERVICE AND MOBILE NETWORK OPERATORS

Operator deployment scenarios are among the most complex in the world, with some operators simultaneously delivering public access Wi-Fi, employee Wi-Fi and Wi-Fi as a managed service to their enterprise and small business customers. The SmartZone Data Plane with vSZ allows operators to flexibly deploy tunneled WLANs that suit the unique requirements of each scenario, including carrier Wi-Fi network integration to mobile packet core of an MNO.

INTERNET SERVICE PROVIDERS

Capitalizing on the Wi-Fi-as-a-service trend, service providers are creating new revenue streams while simultaneously helping customers manage their Wi-Fi, an increasingly complex network element. The multi-tenant-capable vSZ with the SmartZone Data Plane enables service providers to create and deploy sophisticated, multi-tier tenant offerings, even across geographic and commercial boundaries.



LARGE CAMPUS ENTERPRISES

End-user quality-of-service expectations are on the rise. Capital equipment budgets are not. The SmartZone Data Plane with vSZ provides methods for IT departments to manage end-user experiences proactively with minimal touch points on the edge network equipment.

FEATURES

Secure Tunneled WLANs

The SmartZone Data Plane enables providers to isolate and securely tunnel Wi-Fi client traffic through any Ruckus Wi-Fi-managed network. SmartZone-managed Ruckus APs help isolate and tunnel traffic on the access network through the SmartZone Data Plane, which is then directed to the Internet or tunneled to third-party gateways. This feature enables SmartZone-managed WLANs to isolate guest traffic, forward point-of-sale (POS) data securely, route voice-over-IP (VoIP) packets, and enable roaming across segmented layer 2 and layer 3 networks. Additionally, data tunneling flexibility reduces costs, single points of failure and throughput performance bottlenecks and is especially important when the service provider or enterprise operator does not have control over the backhaul links.

Data Scaling

SmartZone Data Plane scales to handle data traffic from 10,000 tunnels on a single instance to satisfy requirements of large service providers and enterprises. Licenses in throughput configurations of 1 Gbps to 10 Gbps are offered on both vSZ-D and SZ100-D to properly scale networks as needs change. The vSZ-D is built on Intel's DPDK framework and architected to support data aggregation with encryption at large scale with minimal data forwarding latencies and supports up to an unlimited throughput configuration license on appropriate hardware.

Centralized Management

Designed for flexibility, the SmartZone Data Plane can be deployed in a centrally located data center along with the SmartZone network controller or can be deployed at specific venues in a distributed architecture while managed by a centralized controller.

Private/Public Cloud

The vSZ-D can be deployed in a private cloud to support one network or in a public cloud to support hundreds or even thousands of managed WLAN networks. vSZ-D instances can run on an open-source KVM hypervisor or a VMware vSphere hypervisor.

SmartZone Data Plane Zone Affinity

Zone affinity allows deployment of individual SmartZone Data Planes on a per-site or regional basis. SmartZone Data Plane instances deployed at each site enable providers to manage remote sites from a central or regional data center where the Virtual SmartZone Network controller (vSZ) resides, while enabling data forwarding flexibility locally within the site or beyond. The zone affinity feature helps with the design and deployment of highly available distributed networks.

DHCP/NAT

DHCP services incorporated into the SmartZone Data Plane enable high-speed wireless client IP assignment, while built-in NAT services help reduce MAC-address scaling challenges on infrastructure switches. The DHCP server built in-line within the SmartZone Data Plane is useful in high-density deployments like stadiums, universities or mass transit stations where large numbers of clients continuously move in and out of Wi-Fi coverage causing repeated IP address assignment requests. NAT services reduce MAC-table lookups on up-stream switches, which enhances network performance.

L3 Roaming

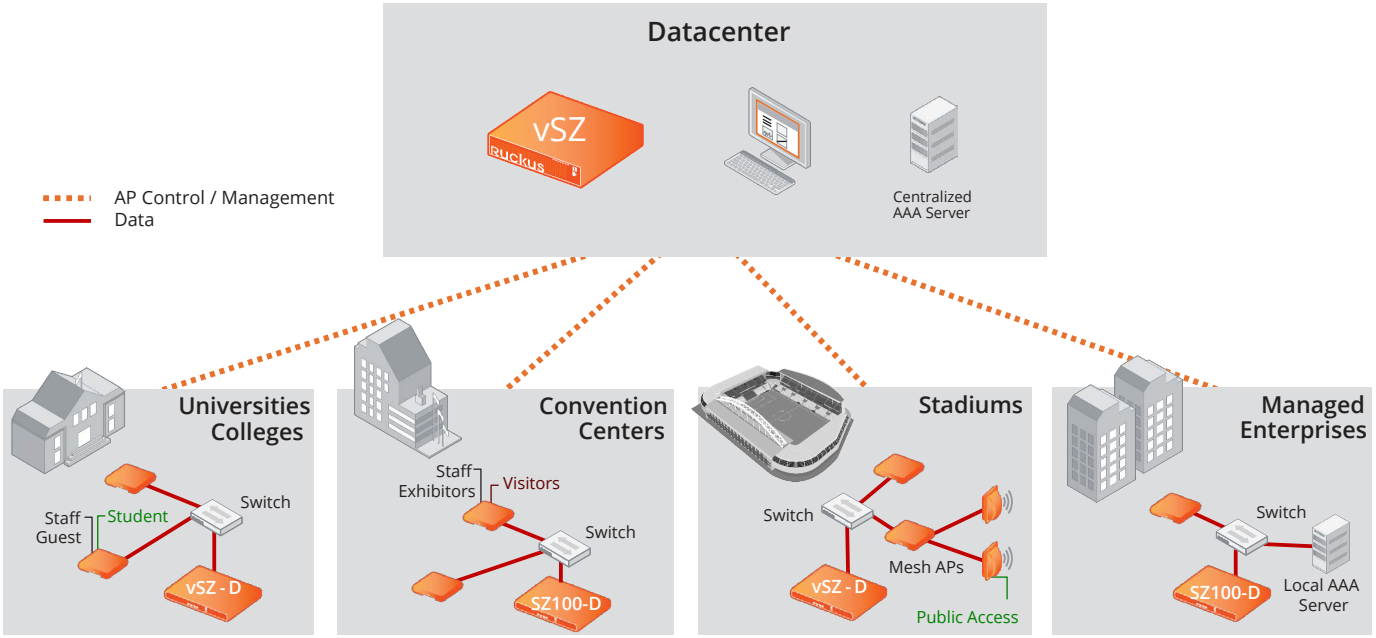
Distributed SmartZone Data Planes interconnect via Ruckus GRE tunnels enabling layer 3 roaming with client IP address preservation without the need for a separate mobility controller, saving costs.

Lawful Intercept

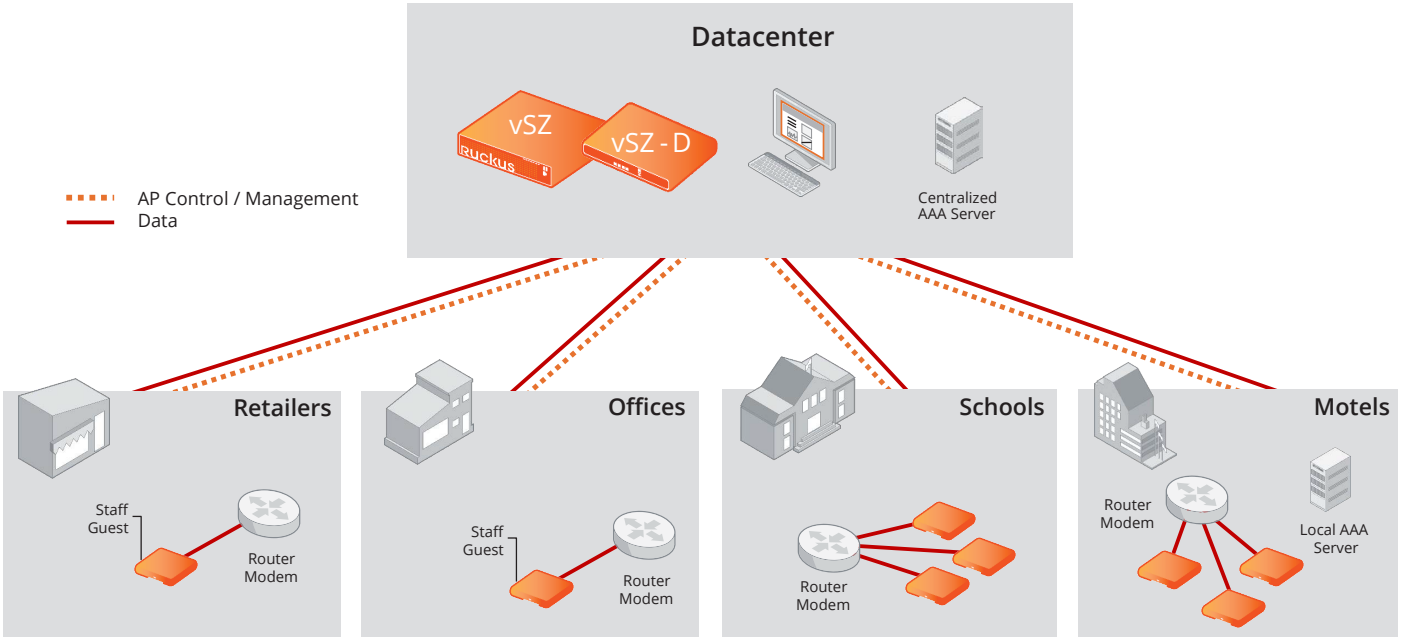
Support lawful intercept of encrypted traffic to maintain CALEA compliance on public or government-owned networks. Enable the mirroring of client traffic to a LIG (lawful intercept gateway) over L2oGRE (soft GRE). SmartZone Data Planes can be defined as a CALEA mirroring agent that forwards encrypted traffic for lawful compliance.

Virtualized Trusted Wireless Access Gateway (vTWAG)

Integrate Wi-Fi into the mobile packet core to core to enable mobile data offload to Wi-Fi. Provide secure and seamless Wi-Fi service for mobile subscribers looking for high speed internet access with encryption and tunneling. vTWAG is supported only on vSZ-D.



Distributed Date Plane Deployment
Well suited for large campus, high-density venues, and multi-site enterprises. Connect tenant traffic locally to the Internet by distributing vSZ-D or SZ100-D remotely, while placing the vSZ controller in the data center for centralized management.



Centralized Data Plane Deployment
Well suited for managed services providers targeting medium-size enterprises. Deploy vSZ-D alongside the vSZ controller in the data center for centralized data plane aggregation from all sites.

KEY FEATURES

	VIRTUAL DATA PLANE (VSZ-D)	APPLIANCE DATA PLANE (SZ100-D)
Hypervisor support	• VMware • KVM	N/A
Dynamic data plane scaling	Options: • 1 Gbps • 10 Gbps • Or even higher throughput capacities	Options: • 1 Gbps (D104 product) • 10 Gbps (D124 product)
Redundancy	• Up to 4 instances in N+1 Active/Active Mode	—
Integration with vSZ controller	• 10 vSZ-D instances per vSZ instance • 40 vSZ instances per vSZ cluster of 4 instances • Each vSZ-D runs as an independent virtual machine instance that is managed by the vSZ controller	• 10 SZ100-D appliances per vSZ instance • 40 SZ100-D appliances per vSZ cluster of 4 instances
Flexible configuration	Encrypted tunnel aggregation from all types of WLANs (captive portal, 802.1x, HS2.0), VLANs, DHCP relay, NAT traversal	
Services	• DHCP server/NAT • Layer 3 roaming • Lawful Intercept (CALEA) • vTWAG* • Flexi-VPN Note: All available services for data plane can be used on any data plane product. * TWAG functionality is available on vSZ-D only.	
Northbound tunnels	• L2oGRE • QinQ • GTP* * TWAG on vSZ-D	

VSZ-D: SYSTEM REQUIREMENTS	
Hypervisor support	• VMware ESXi 5.5 and later • KVM (CentOS 7.0 64 bit)
Processor	• Intel Xeon E55xx and above. Recent Intel E5-26xx chips are recommended.
Number of cores	• Minimum 3 cores per instance dedicated for data plane processing. DirectIO mode for best data plane performance. vSwitch mode for flexibility and service chaining.
Memory	• Minimum 6 GB memory per instance
HDD	• Hard disk 10 GB per instance
NICs that support Intel DPDK	• Intel NICs iab, ixabe • 82576, I350 • 82599EB, 82599, X520 (the above have been validated in Ruckus Labs)

SZ100-D: PHYSICAL CHARACTERISTICS	
Power	• AC power consumption: 250W
Dimensions	• 1RU rack mountable: 438 mm (W) x 292.1 mm (D) x 44 mm (H); 17.25 in. (W) x 11.5 in. (D) x 1.73 in. (H)
Weight	• 5 kg; 11.02 lb.
Connections	• D104: 4 – 1 GbE ports • D124: 2 – 10 GbE ports, 4 – 1 GbE ports
Environmental conditions	• Operating temperature: 0°C (32°F) – 40°C (104°F)

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MODEL	DESCRIPTION
Virtual Data Plane (vSZ-D) (Orderable with SZ 3.2 and above software releases)	
L09-vSZD-WW00	• Virtual Data Plane 3.2 or newer software virtual appliance, 1 instance (includes throughput upto 1 Gbps)
L09-vSZD-BW10	• Virtual Data Plane Bandwidth Upgrade - 1 instance ADD ON (throughput upto 10 Gbps)
L09-vSZD-BWUL	• Virtual Data Plane Bandwidth Upgrade - 1 instance ADD ON (No throughput cap)
Appliance SmartZone Data Plane (SZ100-D) (Orderable with SZ 5.1 and above software release)	
P01-D104-XX00	• Data plane appliance (throughput up to 1 Gbps)
P01-D124-XX00	• Data plane appliance (throughput up to 10 Gbps)
Additional features for vSZ-D and SZ100-D (Orderable with SZ 3.5 and above software releases)	
L09-vSZD-SVCM	• Virtual Data Plane – Services (CALEA Mirroring) – 1 instance ADD ON
L09-vSZD-SVL3	• Virtual Data Plane – Services (L3 Roaming) – ADD ON – Needs minimum 2 instances
Additional features for vSZ-D and SZ100-D (Orderable with SZ 3.5.1 and above software releases)	
L09-vSZD-SVFX	• Virtual Data Plane – Services – Flexi-VPN ADD-ON (Needs minimum 2 instances)
Additional features for vSZ-D and SZ100-D (Orderable with SZ 5.0 and above software releases)	
L09-vSZD-SNAT	• Virtual Data Plane – Services (NAT) – 100K Sessions - 1 instance ADD ON
L09-vSZD-SDHP	• Virtual Data Plane – Services (DHCP Server) – 1K IP Leases - 1 instance ADD ON
WatchDog Support for Virtual Data Plane (Orderable with SZ 3.2 and above software releases)	
S02-VSZD-1L00	• Partner WatchDog Support - vSZD-RTU, 1 Gbps throughput 1 Yr
S01-VSZD-1L00	• End User WatchDog Support - vSZD-RTU, 1 Gbps throughput 1 Yr
S02-VSZD-1LBW	• Partner WatchDog Support - vSZD-RTU, 10 Gbps throughput 1 Yr
S01-VSZD-1LBW	• End User WatchDog Support - vSZD-RTU, 10 Gbps throughput 1 Yr
S02-VSZD-1LUL	• Partner WatchDog Support - vSZD-RTU, no throughput cap 1 Yr
S01-VSZD-1LUL	• End User WatchDog Support - vSZD-RTU, no throughput cap, 1 Yr
S02-VSZD-3L00	• Partner WatchDog Support - vSZD-RTU, 1 Gbps throughput 3 Yr
S01-VSZD-3L00	• End User WatchDog Support - vSZD-RTU, 1 Gbps throughput 3 Yr
S02-VSZD-3LBW	• Partner WatchDog Support - vSZD-RTU, 10 Gbps throughput 3 Yr
S01-VSZD-3LBW	• End User WatchDog Support - vSZD-RTU, 10 Gbps throughput 3 Yr
S02-VSZD-3LUL	• Partner WatchDog Support - vSZD-RTU, no throughput cap 3 Yr
S01-VSZD-3LUL	• End User WatchDog Support - vSZD-RTU, no throughput cap, 3 Yr
S02-VSZD-5L00	• Partner WatchDog Support - vSZD-RTU, 1 Gbps throughput 5 Yr
S01-VSZD-5L00	• End User WatchDog Support - vSZD-RTU, 1 Gbps throughput 5 Yr
S02-VSZD-5LBW	• Partner WatchDog Support - vSZD-RTU, 10 Gbps throughput 5 Yr
S01-VSZD-5LBW	• End User WatchDog Support - vSZD-RTU, 10 Gbps throughput 5 Yr
S02-VSZD-5LUL	• Partner WatchDog Support - vSZD-RTU, no throughput cap 5 Yr
S01-VSZD-5LUL	• End User WatchDog Support - vSZD-RTU, no throughput cap, 5 Yr
WatchDog Support for Virtual Data Plane additional features (Orderable with SZ 3.5 and above software releases)	
S02-VSZD-1LCM	• Partner Support vSZD CALEA Mirroring 1 Yr
S01-VSZD-1LCM	• End User Support vSZD CALEA Mirroring 1 Yr
S02-VSZD-1LL3	• Partner Support vSZD L3 Roaming 1 Yr
S01-VSZD-1LL3	• End User Support vSZD L3 Roaming 1 Yr
S02-VSZD-3LCM	• Partner Support vSZD CALEA Mirroring 3 Yr
S01-VSZD-3LCM	• End User Support vSZD CALEA Mirroring 3 Yr
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S02-VSZD-5LL3	• Partner Support vSZD L3 Roaming 5 Yr
S01-VSZD-5LL3	• End User Support vSZD L3 Roaming 5 Yr

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